

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 1-20 are now presented for examination. Claims 1 and 16-20 have been amended to define still more clearly what Applicant regards as his invention, in terms which distinguish over the art of record. Claim 8 having been indicated as allowable, Claims 1, 16 and 18 are the only independent claims under consideration.

Claim 1 previously indicated as allowable has been amended by deleting "data creation" from the preamble phrase "A charged-particle beam drawing ~~data creation~~ method of supplying bit information created from design pattern data in a scanning direction of a charged-particle beam". It is believed that term "data creation" as used in Claim 1 is unnecessary for defining the invention and Claim 1 has been amended to clarify its scope. It is not believed that deleting "data creation" affects the allowability of the claim.

Independent Claim 16 as currently amended is directed to a device manufacturing method of irradiating a charged particle beam to a surface based on data of a basic drawing region defined by a charged particle exposure apparatus. According to the method, a cell pattern is extracted as one unit of a periodic structure from the design pattern. Arrangement data is created that is used in the case of forming the data of the basic drawing region from data of the cell pattern. Data of the basic drawing region is formed from the data of the cell pattern based on the created arrangement data.

Claim 16 has been amended to clarify that its scope includes extracting a cell pattern, creating arrangement data and forming the data of the basic drawing region based on the results of the extracting and the creating. It is believed that the steps of Claim 16 as currently amended substantively correspond to the extracting, creating and converting steps of previously allowed Claim 16 and that Claim 16 as currently amended is allowable.

Claims 18-20 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 6,144,760 (Ohnuma). With regard to these claims as currently amended, this rejection is respectfully traversed.

Independent Claim 18 as currently amended is directed to a charged particle beam exposure apparatus that patterns on a surface in accordance with a design pattern. In the Apparatus, a main body irradiates a charged particle beam to the surface based on data of a basic drawing region defined by the charged-particle beam exposure apparatus. A controller forms the data of the basic drawing region from data of a cell pattern extracted as one unit of a periodic structure from the design pattern based on a parameter.

In Applicant's view, Ohnuma discloses an exposure data correction method in which an initial hash database is generated by giving hash indices to drawing data of drawing patterns that are obtained by performing calculation processing on exposure data relating to layout-designed exposure data. Drawing data of a target drawing pattern is extracted by searching the hash database, and the extracted drawing data is subjected to a proximity effect correction. Then,

a new hash database is generated by giving hash indices to the corrected drawing data. As a result, the data retrieval time is greatly shortened and the amount of corrected data is reduced.

According to the invention defined in Claim 18 as currently amended, a controller forms the data of the basic drawing region defined by charged particle exposure apparatus from data of a cell pattern that is extracted as one unit of a periodic structure from the design pattern based on a parameter.

Ohnuma teaches methods relating to proximity effect correction for an electron beam in which design patterns are converted into mask patterns. In Ohnuma's converting process, drawing regions are divided into mesh regions (e.g., Fig. 5) and, as shown in Fig. 4, drawing data of all the drawing patterns in a mesh region is subjected to proximity effect correction. The Ohnuma disclosure, however, is devoid of any suggestion of use of a cell pattern extracted as one unit of a periodic structure from a design pattern to form the data of the basic drawing region. Accordingly, it is not seen that Ohnuma's correction of drawing patterns in mesh regions with respect to proximity effect could possibly teach or suggest the feature of Claim 18 of forming data of a basic drawing region from data of a cell pattern extracted as one unit of a periodic structure from a design pattern. It is therefore believed that Claim 18 as currently amended is completely distinguished from Ohnuma and is allowable.

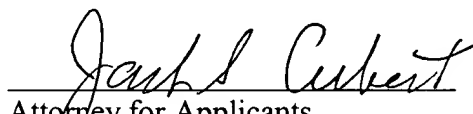
Independent Claim 8 has been indicated as allowable. For the foregoing reasons, Applicants submit that the present invention, as recited in independent claims 1, 16 and 18 as currently amended is patentably defined over the cited art.

Dependent Claims 9-15 have been indicated as allowable. The dependent claims 2-7, 17, 19 and 20 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Individual consideration of these dependent claims is requested.

Applicant further submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and a Notice of Allowance are requested.

Applicants' attorney, Steven E. Warner, may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,


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